



DIET QUALITY SIGNIFICANTLY AFFECTS C-REACTIVE PROTEIN LEVELS in an AFRICAN AMERICAN and WHITE URBAN POPULATION

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Dare to be first.



Background

Health and nutritional status tend to be worse for US populations with limited resources and for African Americans compared to Whites. Inflammation is influenced by sociodemographic factors and lifestyle. C-Reactive Protein, an inflammatory biomarker, is influenced by genetics and lifestyle, including dietary patterns and socioeconomic status. The inverse association between diet quality and CRP is biologically feasible since many micronutrients have antioxidative properties. Exogenous antioxidants provided by the diet may enable the body to manage the balance between the production and accumulation of the reactive species that cause oxidative stress.

Purposes

- To determine diet quality of African American (AA) and White participants examined in the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study .
- To determine the influence of diet quality on C-reactive protein (CRP), a systemic inflammation marker and independent predictor of cardiovascular disease risk.

Participants

- 2,176 African American and white, socioeconomically diverse, urban men (n=945) and women (n=1231), aged 30-64 years who participated in the baseline phase of the HANDLS study. The HANDLS study is a prospective longitudinal study using a fixed cohort of 3,720 adults living in Baltimore, Maryland.
- Exclusions: AIDS, undergone cancer treatment within 6 months of recruitment, or pregnant
- Inclusions: Completed 2 days dietary intake, C-Reactive protein levels, and demographic variables.

Materials and Methods

- Diet intakes were collected via two 24-hour recalls using the USDA's computerized automated multiple pass method, usually 4-10 days apart.
- Diet quality was calculated using a micronutrient composite index - the nutrient adequacy ratios (NAR) and a mean adequacy ratio (MAR).
 - >NARs were calculated by comparing the proportion of 9 vitamins and 6 minerals consumed to the recommended dietary allowance (RDA).
 - >Vitamins included folate, niacin, thiamin, riboflavin, and Vitamins A, B₆, B₁₂, C, & E
 - >Minerals included calcium, copper, iron, phosphorous, magnesium, zinc
 - >MAR was calculated by dividing the sum of 15 NARs by 15 with a maximum score of 100.
- CRP levels were assessed by the nephelometric method utilizing latex particles coated with CRP monoclonal antibodies .
- To assess the linear effect of diet quality (MAR) on CRP, regression analysis was performed controlling for body fat, hypertension, insulin resistant (HOMA-IR), age, sex, race, and education. CRP levels were log transformed.

Results

Figure 1. C-Reactive Protein Levels of HANDLS Study Participants

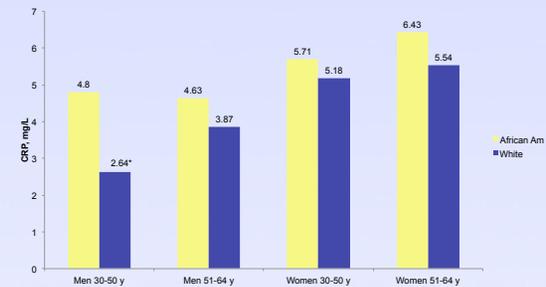
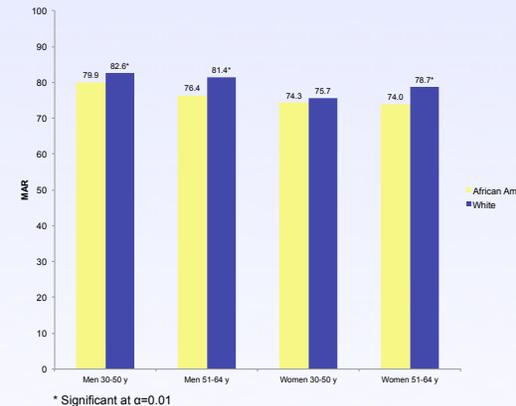


Figure 2. Mean Adequacy Ratio (MAR) Scores of HANDLS Study Participants



Key Results

- There was an average downward trend in the CRP from young males to older females associated with an average downward trend in MAR for sex and age groups in the opposite direction.
- Except for women, 30 to 50 y, MAR scores were significantly higher among Whites compared to African Americans examined in the HANDLS study.
- Body fat and hypertension had a significant and inverse influence on CRP levels.
- There were two significant interactions: HOMA-IR was moderated by sex and education was moderated by race.
- Magnesium and Vitamins A, C and E were the antioxidant nutrients found to be the most inadequate in the diet.

Conclusion

HANDLS African American and White study participants consume the typical Western Diet which results in inadequate intake of essential nutrients, especially those with antioxidant action. Diet quality assessed by MAR scores was found to have a significant independent and inverse influence on CRP, with a 10% increase in MAR leading to a 4% decrease in CRP .